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Schistosomiasis transmission at high altitude crater lakes in Western Uganda

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Abstract:

Background: Contrary to previous reports which indicated no transmission of schistosomiasis at altitude >1,400 m above sea level in Uganda, in this study it has been established that schistosomiasis transmission can take place at an altitude range of 1487–1682 m above sea level in western Uganda. Methods: An epidemiological survey of intestinal schistosomiasis was carried out in school children staying around 13 high altitude crater lakes in Western Uganda. Stool samples were collected and then processed with the Kato-Katz technique using 42 mg templates. Thereafter schistosome eggs were counted under a microscope and eggs per gram (epg) of stool calculated. A semi-structured questionnaire was used to obtain demographic data and information on risk factors. Results: 36.7% of the pupils studied used crater lakes as the main source of domestic water and the crater lakes studied were at altitude ranging from 1487–1682 m above sea level. 84.6% of the crater lakes studied were infective with over 50% of the users infected. The overall prevalence of Schistosoma mansoni infection was 27.8% (103/370) with stool egg load ranging from 24–6048 per gram of stool. 84.3%(312) had light infections (400 egg/gm of stool). Prevalence was highest in the age group 12–14 years (49.5%) and geometric mean intensity was highest in the age group 9–11 years (238 epg). The prevalence and geometric mean intensity of infection among girls was lower (26%; 290 epg) compared to that of boys (29.6%; 463 epg) (t Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 4.383, p < 0.05). Though 61%(225) of the pupils interviewed were aware of the existence of the disease, 78% (290)didn't know the mode of transmission and only 8% (30) of those found infected were aware of their infection status. In a multivariate logistic regression model, altitude and water source (crater lakes) were significantly associated with infection. Conclusion and recommendations: The altitudinal threshold for S. mansoni transmission in Uganda has changed and use of crater water at an altitude higher than 1,400 m above sea level poses a risk of acquiring S. mansoni infection in western Uganda. However, further research is required to establish whether the observed altitudinal threshold change is as a result of climate change or other factors. It is also necessary to establish the impact this could have on the epidemiology of schistosomiasis and other vector-borne diseases in Uganda. In addition, sensitisation and mass treatment of the affected community is urgently required.

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Resource Description

Exposure: M

weather or climate related pathway by which climate change affects health

Ecosystem Changes

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Geographic Feature: M

resource focuses on specific type of geography

Freshwater, Mountain

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Country

Other African Country: Uganda

Health Impact: M

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Schistosomiasis

Population of Concern: A focus of content

Population of Concern: M

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: **☑**

format or standard characteristic of resource

Research Article

Timescale: M

time period studied

Time Scale Unspecified